

NETWORK OPERATING SYSTEM FOCUS TECHNOLOGY

RTOP 482-58-19-02

AN ACTIVITY STRUCTURED TO PROVIDE SPECIFIC DESIGN REQUIREMENTS AND SPECIFICATIONS FOR THE SS DMS NETWORK OPERATING SYSTEM (NOS) BY THE 1987 PHASE C/D RFP IS OUTLINED. EXAMPLES ARE GIVEN OF THE TYPES OF SUPPORTING STUDIES AND IMPLEMENTATION TASKS PRESENTLY UNDERWAY TO REALIZE A DMS TEST BED CAPABILITY TO DEVELOP HANDS-ON UNDERSTANDING OF NOS REQUIREMENTS AS DRIVEN BY VARIOUS ACTUAL SUBSYSTEM TEST BEDS PARTICIPATING IN THE OVERALL JSC DMS TEST BED PROGRAM. DISCUSSION IS PROVIDED OF A BASIC NOS CONCEPT BASED ON A RECENTLY COMPLETED FY-85 STUDY WHICH PRESENTS A SET OF MINIMUM AND MAXIMUM NOS REQUIREMENTS CONSISTENT WITH A MODULAR/DISTRIBUTED DMS CONCEPT.

1. THE DMS TEST BED
2. THE DMS TEST BED



NASA OAST
COMPUTER/SCIENCE/DATA SYSTEMS
TECHNICAL SYMPOSIUM

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AVIONICS SYSTEMS DIVISION

P. E. SOLLOCK

APRIL 1985

OBJECTIVE:

DEVELOP, PROOF TEST AND DELIVER A SET OF DETAILED DESIGN REQUIREMENTS FOR SS DMS NOS TO SUPPORT PHASE C/D RFP

RATIONALE:

DMS IS INTEGRATING MEDIA FOR ALL SS DISTRIBUTED SYSTEMS AND SYSTEM/DMS INTERFACE MUST BE STABLE AND WELL DEFINED TO ALLOW RESPECTIVE VENDOR(S) DEVELOPMENT OF EACH SYSTEM.

APPROACH:

USE SS DMS TEST BED HANDS-ON INTEGRATION OF REPRESENTATIVE SYSTEM(S) TEST BEDS (D&C, PM&D, ECLSS, C&T,...) TO FORMULATE VALID SET OF DMS SERVICES AND NOS REQUIREMENTS.

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| NOS FY-85 MAJOR ACTIVITIES | | AVIONICS SYSTEMS DIVISION |
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- o NETWORK TECHNOLOGY COMMUNICATIONS ASSESSMENT (LEMSCO SUPPORT CONTRACT)
- o NOS FUNCTIONAL REQUIREMENTS STUDY (LEMSCO/UNIVERSITY CONSULTANT)
- o LAYER 7 REQUIREMENTS DEFINITION STUDY (AT&T; CANCELED AFTER FIRST REPORT)
- o ADA SUITABILITY FOR NOS DESIGN/DEVELOPMENT STUDY (CSDL)
- o DEFINITION/DEVELOPMENT OF DMS USERS GUIDE (LEMSCO SUPPORT CONTRACTOR)
- o HARDWARE/SOFTWARE FOR DMS TEST BED NETWORK TO SUPPORT NEAR TERM SYSTEM INTEGRATION ACTIVITIES

**NETWORK OPERATING SYSTEM
DEFINITION AND DESIGN****AVIONICS SYSTEMS****DIVISION****P.E. SOLLOCK***** PRINCIPAL ELEMENTS OF THE DMS**

- * NETWORK OF HARDWARE & SOFTWARE WHICH
CONNECTS OTHER COMPUTER ELEMENTS AND
SUPPORTS DATA EXCHANGE AND REMOTE CONTROL
- * DATA BASE HARDWARE & SOFTWARE WHICH
PROVIDES DATA STORAGE/RETRIEVAL SERVICES
FOR SHARED DATA AND MANAGE CONCURRENCY
ASPECTS OF DATA ACCESS
- * MULTIPURPOSE APPLICATIONS CONSOLES (MPAC)
TO PROVIDE UNIFORM MAN/MACHINE INTERFACES
TO ALL FUNCTIONS
- * FACILITIES MANAGEMENT HARDWARE/SOFTWARE
TO PROVIDE SYSTEM-WIDE RESOURCE AND
CONFIGURATION MANAGEMENT, ANALYSIS,
AND SCHEDULING SERVICES

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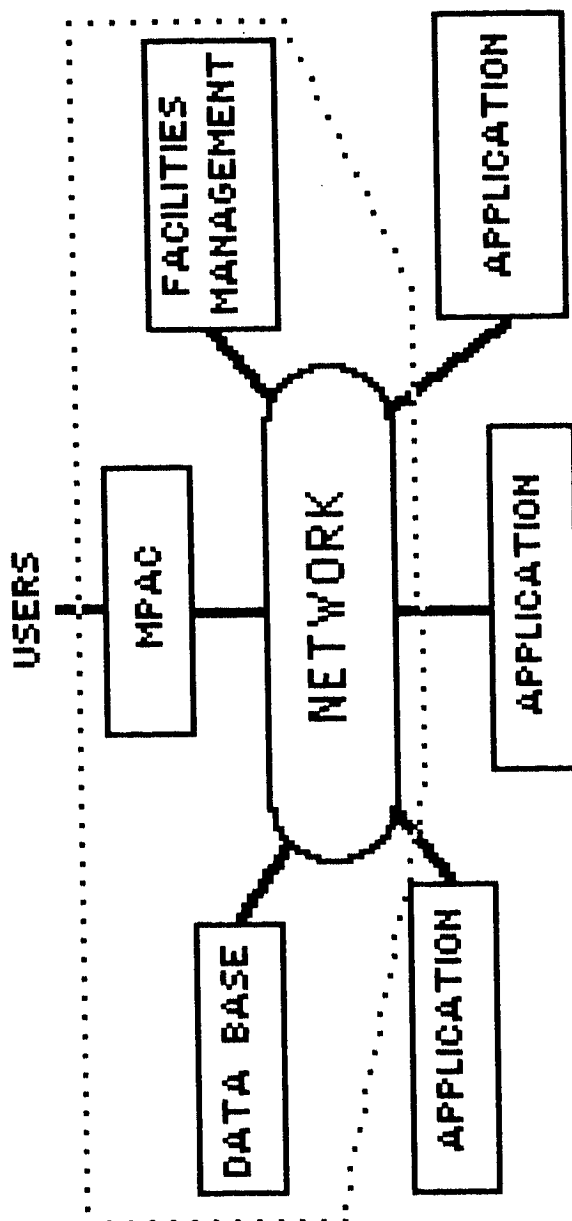


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MODULAR DMS ORGANIZATION



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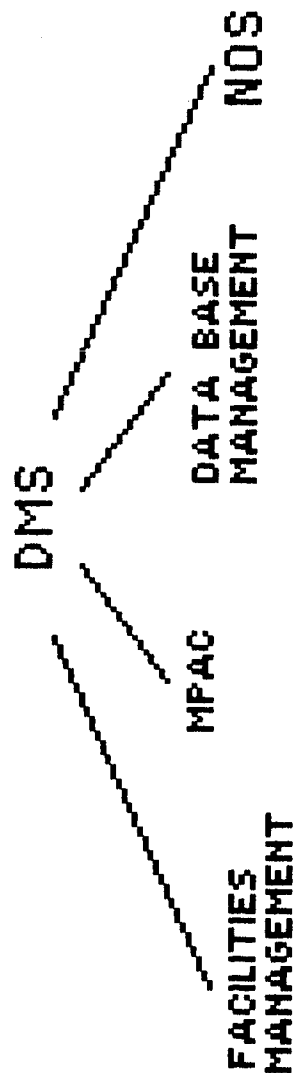


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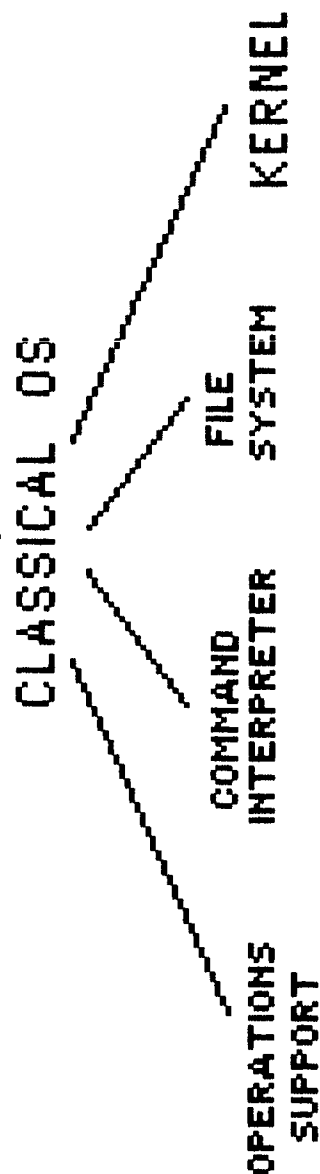
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SUBSYSTEMS



USERS



PARALLELS BETWEEN DMS AND
CLASSICAL OPERATING SYSTEMS



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*CLASSICAL OPERATING SYSTEM ELEMENTS

- * KERNEL--SET OF BASIC FUNCTIONS AND SERVICES UPON WHICH ALL SYSTEMS CAPABILITIES ARE ARE BASED
- * FILE SYSTEM--PROVIDES A LOGICAL ORGANIZATION AND HIGH-LEVEL INTERFACE TO EXTERNALLY STORED DATA
- * COMMAND INTERPRETER OR SHELL--PROVIDES AN INTERACTIVE MAN/MACHINE INTERFACE
- * OPERATIONS SUPPORT--PROVIDES A SET OF UTILITIES WHICH CAN BE USED TO CONFIGURE, MANAGE, MONITOR AND OTHERWISE AID MANUAL OPERATION OF COMPUTATIONAL RESOURCES



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***PRINCIPAL NOS FUNCTIONS**

- * CONTROL USE OF MEDIUM, INCLUDING ALL CONDITIONS OF ACCESS, SUCH AS WHO, WHAT, WHEN AND FOR HOW LONG**
- * PROVIDES STANDARD APPLICATIONS-LEVEL COMMUNICATIONS INTERFACES FOR INTER-SUBSYSTEM TRANSACTIONS**
- * PROVIDE CONTINUOUS OPERATION OF THE NETWORK INCLUDING GATHERING PERFORMANCE AND FAULT DATA, SUPPORTING CONFIGURATION CHANGES, AND ERROR RECOVERY**

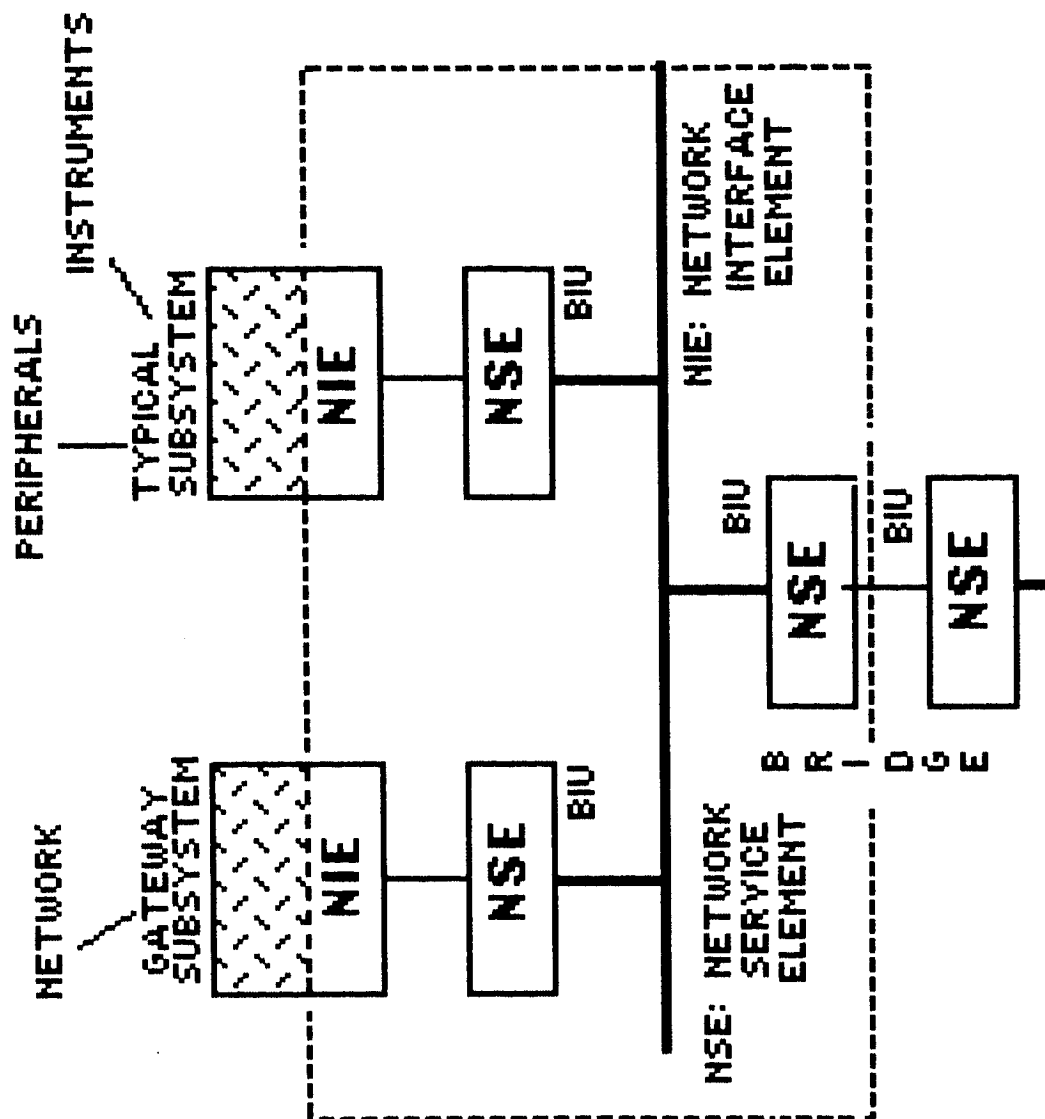


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DOMAIN OF THE NOS



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